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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,187	10/28/2003	William C. Weigler	IS01207AP	4286

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SCHAUMBURG, IL 60196

EXAMINER

JOHNSON, JONATHAN J

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/695,187

Applicant(s)

WEIGLER ET AL.

Examiner

Jonathan Johnson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7 and 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 3580462 (Reynolds) in view of US 5,143,272 (Carlomango). Reynolds teaches providing a sacrificial circuit substrate with a single pad (figure 3, items 20 and 22), a portion of each pad having a solder-wettable material disposed thereon (figure 3, items 20 and 22); placing the pad of the sacrificial circuit substrate in vertical proximity to the excess solder of the circuit substrate (Figure 3, item 18); heating the excess solder to a liquidous state (figure 4, item 26); wicking the excess solder vertically onto the pad of the sacrificial circuit substrate (figure 3, item 22); and lifting the sacrificial circuit substrate from the proximity of the circuit substrate while the solder is in a liquidous state (figure 5, item 28); wherein the circuit substrate is flexible and wherein the providing step includes providing a rigid sacrificial circuit substrate (figure 1, item 18); heating step includes using hot gas to reflow the excess solder (figure 3, item 26); the pad including are plated with a solder-wettable material used as the wicking material (figure 3, item 22) where all surfaces in contact with the solder is plated with the wicking material (figure 3, item 22); wherein the dimensions of the pads, vias and through-holes are configured to leave a residual amount of solder on the circuit substrate after the wicking and lifting steps (figure 2, item 14);

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applying flux to the sacrificial circuit substrate. Carlomango teaches the use of a vacuum suction device at each point of removing excess solder (Figure 1, item 20). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Reynolds to utilize a vacuum suction point at each solder land in order to further assist in removing of excess solder (see Carlomango abstract).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 3580462 (Reynolds) and US 5,143,272 (Carlomango) as applied to claim 1 above and further in view of JP 52-42447 (MATU). Matu teaches applying flux in order to remove impurities and reduce surface tension imparted to the solder (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Reynolds and Carlomango to utilize applying flux to the sacrificial circuit in order to reduce the impurities and the surface tension of the solder (Matu abstract).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 3580462 (Reynolds) and US 5,143,272 (Carlomango) as applied to claim 9 above and further in view of JP 52-42447 (MATU). Matu teaches applying flux in order to remove impurities and reduce surface tension imparted to the solder (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Reynolds and Carlomango to utilize applying flux to the sacrificial circuit in order to reduce the impurities and the surface tension of the solder (Matu abstract).

Response to Arguments

Applicant argues Reynolds does not teach the claimed vias. The examiner agrees. Applicant goes on to argue that Carlmango is missing the claimed limitation. The examiner disagrees. Reynolds broadly teaches that all surfaces in contact with the solder is plated with the wicking material (Reynolds, figure 3, item 22). Carlmango teaches the use of a vacuum suction device having a hole at each point where excess solder is to be removed (Carlomango, figure 1, item 20). As stated above, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Reynolds to utilize a vacuum suction point at each solder land in order to further assist in removing of excess solder (see Carlomango abstract).

Applicant next argues that "use of a vacuum may case damage to the circuit board." While this may be true, applicant is reminded that the arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965). Applicant is invited to submit an affidavit or declaration showing how using a vacuum would damage the circuit board.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after


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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Johnson whose telephone number is 571-272-1177. The examiner can normally be reached on M-Th 7:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jonathan Johnson
Primary Examiner
Art Unit 1725